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# CERMET SILVER CONDUCTOR 9912-A

ESL 9912-A is a mixed bonded silver paste particularly developed for chip resistors, consumer hybrid circuits, potentiometers and heater elements. Because of its wide firing temperature range, 9912-A may be processed on a variety of substrates including glass, porcelain enameled steel (PES), alumina, and beryllia. The 9912-A may be protected with ESL 4904 to prevent electrolytic silver migration.

## PASTE DATA

| | |
|---|---|
| **RHEOLOGY:** | Thixotropic, screen printable paste |
| **VISCOSITY:** (Brookfield RVT, ABZ Spindle, 10 rpm, 25.5°C±0.5°C) | 150±25 Pa· s |
| **SHELF LIFE:** (25°C) | 6 months |

## PROCESSING

| | |
|---|---|
| **SCREEN MESH/EMULSION:** | 325/25 µm |
| **LEVELING TIME:** (25°C) | 5-10 minutes |
| **DRYING AT 125°C:** | 10-15 minutes |
| **FIRING RANGE:** | 625°C-930°C |
| **alumina:** | 850°C |
| **beryllia:** | 930°C |
| **Porcelain enameled steel:** (in air) | 625°C |
| **TIME AT PEAK:** | 10 minutes |
| **RATE OF ASCENT/DESCENT:** | 50°C-60°C/minute |
| **SUBSTRATE OF CALIBRATION:** | 96% alumina |
| **THINNER:** | ESL 401 |

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## TYPICAL PROPERTIES

| | | | |
|---|---|---|---|
| **FIRED THICKNESS:** | | | 9-14 µm |
| **APPROXIMATE COVERAGE:** | | | 100-125 $cm^2$/gram |
| **RESISTIVITY:** | | | ≤ 3.0 mΩ/sq. |
| **PRINTING RESOLUTION:** (Line/Space) | | | 200 µm x 200 µm |
| **SOLDER WETTABILITY:** (RMA flux, 5 sec. dip, 62 Sn/36 Pb/2 Ag, 220°C±5°C) | | | good - very good |
| **SOLDER LEACH:** (No. of 10 sec. dips to double resistance of 0.25 mm wide x 100 mm long conductor) | | | |
| (62 Sn/36 Pb/2 Ag, 220°C±5°C) | | | > 6 dips |
| **ADHESION:** (90° pull, 2.0 mm x 2.0 mm pads,62 Sn/36 Pb/2 Ag, 220°C±5°C) | | **Alumina** | **Beryllia** |
| | **Initial pull strength:** | ≥ 65 N | ≥ 80 N |
| | **Aged 48 hours at 150°C:** | ≥ 60 N | ≥ 70 N |
| **THERMOSONIC WIRE BOND:** | | | |
| (25 µm Au wire) | | ≥ 50 N | -- |
| **ULTRASONIC WIRE BOND:** | | | |
| (25 µm Al wire) | **Initial:** | ≥ 8 g | -- |
| | **Aged 48 hours at 150°C:** | ≥ 5g | -- |

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